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**REMARKS**

Claims 1-3, 6-13, 16-22, 25-28, 30-34, 38-46, 50-85 are all the claims presently pending in the application. Claims 1, 11, 21, 42, 63-66, and 76 have been amended to more particularly define the invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 49, 76 and 77 stand rejected under 35 U.S.C. §112, second paragraph. Claims 1-3, 6-10, 21, 22, 26-28, 30-34, 38, 40-42, 59, 61, 62, 67, 68, 78, 80 and 81 stand rejected under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 6,252,254 to Soules et al. (hereinafter, "Soules"), in view of U.S. Patent No. 5,847,507 to Butterworth et al. (hereinafter, "Butterworth"), U.S. Patent No. 5,798,536 to Tsutsui, and U.S. Patent No. 5,877,558 to Nakamura et al. (hereinafter, "Nakamura"). Claims 11-13, 16-20, 39, 60 and 79 stand rejected under 35 U.S.C. §103(a) as unpatentable over Soules, Butterworth, Tsutsui, and Nakamura as applied to the claims above, and further in view of U.S. Patent No. 6,153,123 to Hampden-Smith et al. (hereinafter, "Hampden-Smith"). Claims 25, 69-71 and 73 stand rejected under 35 U.S.C. §103(a) as unpatentable over Soules, Butterworth, Tsutsui, and Nakamura as applied to the claims above, and further in view of U.S. Patent No. 6,166,489 to Thompson et al. (hereinafter, Thompson). Claims 46, 49, 50, 72 and 75 stand rejected under 35 U.S.C. §103(a) as unpatentable over Soules, Butterworth, Tsutsui, and Nakamura as applied to the claims above,

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and further in view of U.S. Patent No. 6,340,824 to Komoto et al. (hereinafter, Komoto). Claims 43-45, 63-66 and 82-85 stand rejected under 35 U.S.C. 103(a) as unpatentable over Soules, Butterworth, Tsutsui and Nakamura as applied to the claims above, and further in view of Shimizu. Claims 51-58, 76 and 77 stand rejected under 35 U.S.C. §103(a) as unpatentable over Soules, Butterworth, Tsutsui, and Nakamura as applied to the claims above, and further in view of U.S. Patent No. 6,335,217 to Chiyo et al. (hereinafter Chiyo). Claim 74 stands rejected under 35 U.S.C. §103(a) as unpatentable over Soules, Butterworth, Tsutsui, Nakamura and Thompson as applied to the claims above, and further in view of Komoto.

#### **I. EXAMINER'S RESPONSE TO APPLICANTS' ARGUMENTS**

As a preliminary matter, regarding the Examiner's Response to Arguments, Applicants again point out that the Examiner has clearly mischaracterized Applicants' arguments. Specifically, the Examiner has again erroneously stated that "[t]he new arguments against the references considered alone are unconvincing as one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references" (see Office Action at page 4).

Applicants disagree with the Examiner's interpretation of Applicants' arguments. Specifically, Applicants did not argue the references individually. In contrast, Applicants clearly argued that the combination of references did not teach or suggest a primary light source including a GaN semiconductor light-emitting device that emits a first light having a wavelength of 380 nm to 500 nm. That is, Applicants stated that "neither Soules, Butterworth, Tsutsui nor Nakamura, nor any combination thereof teaches or suggests *'a primary light source comprising a*

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*GaN semiconductor light-emitting device that emits a first light of substantially the entire range of 380 nm to 500 nm*' as recited in independent claim 1, and similarly recited in independent claims 11, 21 and 42 (see Amendment filed March 10, 2005 at page 28) (emphasis Applicants').

Additionally, Applicants point out that the Examiner has erroneously applied the decision of *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). That is, the facts presented in *In re Keller* clearly do not apply to Applicants' arguments.

In *In re Keller* the appellant provided an affidavit that was only concerned with whether one of the applied references suggested the use of a digital timing in a cardiac pacer. That is, the appellant only argued against one of the references, but did not provide any evidence that the other two references used in the 103(a) rejection did not teach or suggest digital timing in a cardiac pacer. The court stated that "the test is not whether a suggestion to use digital timing in a cardiac pacer is round in Walsh (which was the test applied by Dr. Cywinski), but rather what Keller in view of Walsh and what Berkovits in view of Walsh would have suggested to one of ordinary skill in the art". Therefore, in *In re Keller* the appellant only attacked one of the applied references.

However, in stark contrast to the facts of *In re Keller*, in the Amendment filed on March 10, 2005, Applicants clearly provided arguments against each of the references applied in the Examiner's 103(a) rejection. Applicants assert that arguments provided in the Amendment filed on March 10, 2005 are completely different from the facts provided in *In re Keller*.

Therefore, if the Examiner wishes to continue to apply *In re Keller* to the present Application, Applicants respectfully request that the Examiner read *In re Keller* in its entirety and compare the facts of *In re Keller* to Applicants' arguments.

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Applicants also point out that the Examiner has failed to properly respond to Applicants Amendment filed on March 10, 2005. That is, the Examiner has clearly failed to answer all material traversed by the Applicants.

MPEP 707.07(f) clearly states that "[w]here the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it". In the Amendment filed on March 10, 2005 Applicants first argued that none of the prior art references, taken alone or in combination, teach or suggest *"a primary light source comprising a GaN semiconductor light-emitting element that emits a first light of substantially the entire range of 380 nm to 500 nm"* as recited in claim 1 and similarly recited in claims 11, 21, 42 and 63-66.

In the Office Action dated May 23, 2005 the Examiner has completely failed to even mention this traversal argument, let alone "take note of the applicant's argument and answer the substance of it". If the Examiner wishes to maintain this rejection, Applicants request that the Examiner formally answer all of Applicants' traversal arguments included in Applicants' Amendment.

## II. THE CLAIMED INVENTION

Applicants' invention of exemplary claim 1 provides a light-emitting apparatus that includes a primary light source including a GaN semiconductor light-emitting device that emits a first light of a wavelength of substantially the entire range of 380nm to 500 nm (see Application at page 3, lines 9-13), the GaN semiconductor light-emitting device including a single reflective layer (e.g., see Application at page 22, line 25 through page 23, line 6), and a transparent

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electrode disposed above the single reflective layer, and a leadframe including a cup portion including a bottom surface on which the GaN semiconductor light-emitting device is mounted, a secondary light source including a fluorescent material that includes at least one of ZnS:Cu, Au, Al; ZnS:Cu, Al; ZnS:Cu; and Y2O2S:Ce, and a fluorescent material resin, the fluorescent material being dispersed within the fluorescent material resin, and the fluorescent material resin being contained in the cup portion, and a sealing member that focuses light emitted from the light-emitting apparatus, the sealing member being disposed above the secondary light source, wherein the fluorescent material absorbs the first light of a first wavelength and emits a second light of a second wavelength, which is greater than the first wavelength (e.g., see Application at page 2, lines 13-25). Because a fluorescent material excited efficiently by light with an emission wavelength of from 380 nm to 500 nm to thereby emit light is used as the fluorescent material, a light-emitting apparatus of high luminance and high efficiency is obtained (see Application at page 3, lines 9-13).

### III. INDEFINITENESS REJECTION

Claims 49, 76 and 77 stand rejected under 35 U.S.C. §112, second paragraph. Applicants have canceled claim 49 to overcome this rejection, thereby rendering this rejection moot.

### IV. THE PRIOR ART REFERENCES

#### A. The Soules Reference

Applicants submit that there are elements of the claimed invention that are not taught or suggested by Soules. That is, Soules does not teach or suggest. "*a primary light source*

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*comprising a GaN semiconductor light-emitting device that emits a first light of a wavelength of substantially the entire range of 380 nm to 500 nm"*(emphasis added) as recited in independent claim 1, and similarly recited in independent claims 11, 21, 42 and 63-66.

The novel combination of features of the claimed invention is not taught or suggested by Soules. The Examiner attempts to rely on column 3, lines 57-60 of Soules to support his allegations. The Examiner, however, is clearly incorrect.

That is, nowhere in this passage (nor anywhere else for that matter) does Soules teach or suggest a primary light source including a GaN semiconductor light-emitting device that emits a first light of a wavelength of substantially the entire range of 380nm to 500 nm. Indeed, the Examiner merely states that Soules teaches LEDs or laser diodes that emit primary, blue light in the range of 420nm-470nm. The LED is covered with a phosphor-containing polymer layer (15) and a clear polymer lens (16), and both of these materials may be composed of the same material, such as silicone.

Applicants submit that the "[t]he law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims" (see MPEP 2144.05). The specific range recited in the claimed invention is an important feature to the invention. That is, Applicants have discovered that because a fluorescent material excited efficiently by light with an emission wavelength of from 380 nm to 500 nm to thereby emit light is used as the fluorescent material, a light-emitting apparatus of high luminance and high efficiency is obtained (see Application at page 3, lines 9-13). Applicants have discovered a specific wavelength range that is important for providing specific features to the claimed invention. This specific claimed feature is not taught or suggested by Soules.

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Additionally, Applicants argue that light is additive. Therefore, a broader range of wavelengths will change the properties of the resultant light. Therefore, the claimed first light having a wavelength in a range of substantially 380nm to 500 nm will have different properties than a light having a much narrower wavelength range (i.e., 420 nm to 470 nm) as in the Soules.

Furthermore, Soules does not teach or suggest "an adhesive layer for securing said light-emitting device in said cup portion of said lead frame, said adhesive layer comprising a filler" as recited in independent claim 1, and similarly recited in independent claims 11, 21, 42 and 63-66.

The Examiner attempts to rely on column 3, lines 57-60 of Soules to support his allegations. The Examiner is clearly incorrect.

That is, nowhere in this passage (nor anywhere else) does Soules teach or suggest an adhesive layer for securing the light-emitting device in the cup portion of the lead frame, where the adhesive layer includes a filler.

Indeed, in Soules the LED is covered with a phosphor-containing polymer layer (15) and clear polymer lens (16), and both of these materials may be composed of the same material, such as silicone.

In contrast, in accordance with an exemplary aspect of the claimed invention, a light-emitting device is mounted onto a cup portion through the adhesive agent (or layer) including

the filler (see Application at page 24, lines 11 through 16). Since the adhesive agent (or layer) includes the filler, a thermal expansion coefficient can be incorporated into the light-emitting device. Thus, boundary separation between the light-emitting device and the adhesive agent (or layer) can be prevented.

GaN semiconductor light-emitting device that emits a first light of a wavelength of substantially the entire range of 380 nm to 500 nm" (emphasis added) as recited in independent claim 1, and similarly recited in independent claims 11, 21, 42 and 63-66.

The novel combination of features of the claimed invention is not taught or suggested by Butterworth. Indeed, the Examiner does not even allege that Butterworth teaches or suggests a primary light source including a GaN semiconductor light-emitting device that emits a first light having a wavelength of substantially the entire range of 380 nm to 500 nm. The Examiner merely relies upon Butterworth as teaching that a fluorescent-material-containing resin may be contained in the cup portion of a cup-shaped lead frame with a transparent resin sealing member formed thereabove.

Butterworth merely discloses a white LED 100 that includes a blue emitting gallium nitride (GaN) die 110 mounted on a reflector cup lead frame 120 (col. 1, lines 31-35). A blob of cerium (Ce) activated yttrium aluminum garnet (YAG) phosphor 130 is placed on top of the LED die 110 (col. 1, lines 36-38).

Furthermore, Butterworth does not teach or suggest "an adhesive layer for securing said light-emitting device in said cup portion of said lead frame, said adhesive layer comprising a filler" as recited in independent claim 1, and similarly recited in independent claims 11, 21, 42 and 63-66.

The novel combination of features of the claimed invention is not taught or suggested

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*reasoning, using the invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result - of the very definition of invention."*

Although the holding in that case let undisturbed, under the "clear error" standard of review, the conclusion of the District Court that the prior art references were properly combinable, it specifically explained that it declined to reverse this conclusion because "...*the two references address precisely the same problem...*" (emphasis added by Applicants):

This aspect of the *Ruiz* holding, in which precisely the same problem is being addressed by both references, is not present in the present rejection (or any of the Examiner's subsequent rejections for that matter). That is, the numerous references allegedly combined by the Examiner each address distinctly different problems.

Moreover, neither Soules, Butterworth, Tsutsui nor Nakamura, nor any combination thereof, teaches or suggests "*a primary light source comprising a GaN semiconductor light-emitting device that emits a first light of a wavelength of substantially the entire range of 380 nm to 500 nm*" (emphasis added) as recited in independent claim 1, and similarly recited in independent claims 11, 21, 42 and 63-66.

The novel combination of features of the claimed invention is not taught or suggested by Nakamura. Indeed, the Examiner merely attempts to rely on the light transmitting electrode (15) of Nakamura as teaching the transparent electrode of the claimed invention.

Nowhere, however, in this passage (nor anywhere else for that matter) does Nakamura teach or suggest a primary light source including a GaN semiconductor light-emitting device that emits a first light having a wavelength of substantially the entire range of 380 nm to 500 nm. Indeed, the Examiner does not even allege that Nakamura teaches or suggests this



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feature. In fact, the Examiner merely relies upon Nakamura as teaching a light-transmitting electrode.

Thus, Nakamura does not make up for the deficiencies of Soules, Butterworth and Tsutsui.

Regarding the rejection of claim 68, Applicants submit that the Examiner has failed to properly establish a *prima facie* case of obviousness. The Examiner has clearly failed to establish a *prima facie* case of obviousness for combining the transparent film of gold of Nakamura with the device of Soules. As indicated above, MPEP 2142 states that "[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings". Additionally, MPEP 2142 states that "[t]he initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done".

Applicants submit that the Examiner has clearly not established a *prima facie* case of obviousness. The Examiner has not provided any motivation for combining the transparent film of gold with the device of Soules. Indeed, the Examiner merely states that Nakamura teaches a transparent film of gold. If the Examiner wishes to maintain this rejection we would point out that the Examiner must provide a proper motivation or suggestion to combine the film of gold of Nakamura to establish a *prima facie* case of obviousness. The Examiner has failed to do so in the present Office Action.

Therefore, Applicants submit that these references, even if combined, would not teach or suggest each and every element of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

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#### **E. The Hampden-Smith Reference**

The Examiner alleges that Hampden-Smith would have been combined with Soules, Butterworth, Tsutsui and Nakamura to teach the claimed invention of claims 11-13, 16-20, 39, 60 and 79. Applicants submit, however, that these references would not have been combined, and that even if combined, the combination would not teach or suggest each and every element of the claimed invention.

That is, the Examiner's motivation to modify Soules, Butterworth, Tsutsui and Nakamura ("(1) to obtain the particular hue associated with the specific phosphor or (2) for business reasons such as relating to the cost and availability of a particular phosphor") does not appear to be a problem in Soules, Butterworth, Tsutsui and Nakamura that would require a solution. Thus, as pointed out in MPEP 2143.01, the Examiner's motivation is "improper". "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination" (emphasis added in MPEP).

Moreover, neither Soules, Butterworth, Tsutsui, Nakamura nor Hampden-Smith, nor any combination thereof, teaches or suggests "*a primary light source comprising a GaN semiconductor light-emitting device that emits a first light of a wavelength of substantially the entire range of 380 nm to 500 nm*" (emphasis added) as recited in independent claim 1, and similarly recited in independent-claims 11, 21, 42 and 63-66.

The novel combination of features of the claimed invention is not taught or suggested by Hampden-Smith. Indeed, the Examiner merely attempts to rely on Hampden-Smith as allegedly teaching various sulfur-containing phosphors that can be used in an array of applications including photoluminescence. The Examiner relies upon columns 35-37 of

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Hampden-Smith to support his allegations.

Nowhere, however, in this passage (nor anywhere else for that matter) does Hampden-Smith teach or suggest a primary light source including a GaN semiconductor light-emitting device that emits a first light having a wavelength of substantially the entire range of 380 nm to 500 nm. Indeed, Hampden-Smith merely teaches using ZnS:Eu, Cu, Au and Al phosphors for various hues of blue/green light and CaS:Eu for red light (see Hampden-Smith at column 36, lines 8-19). The Examiner does not even allege that Hampden-Smith teaches a primary light source including a GaN semiconductor light-emitting device that emits a first light having a wavelength of 380 nm to 500 nm. Therefore, Hampden-Smith fails to make up for the deficiencies of Soules, Butterworth, Tsutsui and Nakamura.

Therefore, Applicants submit that these references, even if combined, would not teach or suggest each and every element of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

#### **F. The Thompson Reference**

The Examiner alleges that Thompson would have been combined with Soules, Butterworth, Tsutsui and Nakamura to teach the claimed invention of claims 25, 69-71 and 73. Applicants submit, however, that these references would not have been combined, and that even if combined, the combination would not teach or suggest each and every element of the claimed invention.

That is, the Examiner's motivation to modify Soules, Butterworth, Tsutsui and Nakamura (for selectively emitting various desired colors, enabling later color readjustment or providing an assembly wherein red color is not subject to color alteration due to phosphor

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by Butterworth. Indeed, the Examiner does not even allege that Butterworth teaches or suggests an adhesive layer for securing the light-emitting device in the cup portion of the lead frame, where the adhesive layer includes a filler. The Examiner merely relies upon Butterworth as teaching that a fluorescent-material-containing resin may be contained in the cup portion of a cup-shaped lead frame with a transparent resin sealing member formed thereabove.

Again, Butterworth merely discloses a white LED 100 that includes a blue emitting gallium nitride (GaN) die 110 mounted on a reflector cup lead frame 120 (col. 1, lines 31-35). A blob of cerium (Ce) activated yttrium aluminum garnet (YAG) phosphor 130 is placed on top of the LED die 110 (col. 1, lines 36-38).

In contrast, in accordance with an exemplary aspect of the claimed invention, a light-emitting device is mounted onto a cup portion through the adhesive agent (or layer) including the filler (see Application at page 24, lines 11 through 16). Since the adhesive agent (or layer) includes the filler, thermal expansion coefficient can be incorporated into the light-emitting device. Thus, boundary separation between the light-emitting device and the adhesive agent (or layer) can be prevented.

### C. The Tsutsui Reference

Applicants submit that there are elements of the claimed invention that are not taught or suggested by Tsutsui.

That is, Tsutsui does not teach or suggest "*a primary light source comprising a GaN semiconductor light-emitting device that emits a first light of a wavelength of substantially the entire range of 380 nm to 500 nm*"(emphasis added) as recited in independent claim 1,

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and similarly recited in independent claims 11, 21, 42 and 63-66.

The novel combination of features of the claimed invention is not taught or suggested by Tsutsui. Indeed, the Examiner does not even allege that Tsutsui teaches or suggests a primary light source including a GaN semiconductor light-emitting device that emits a first light having a wavelength of substantially the entire range of 380 nm to 500 nm. The Examiner merely relies upon Tsutsui as teaching a GaN emitter formed on a sapphire substrate and for teaching that the GaN chip may further possess a light reflection film 11 on the rear side of the sapphire substrate for reflecting light that is directed toward the substrate and back toward the front, upper light emission surface.

Furthermore, Tsutsui does not teach or suggest *"an adhesive layer for securing said light-emitting device in said cup portion of said lead frame, said adhesive layer comprising a filler"* as recited in independent claim 1, and similarly recited in independent claims 11, 21, 42 and 63-66.

The Examiner alleges that Tsutsui teaches a GaN emitter with a reflector 11 attached to a metal substrate 3 with adhesive silver paste. The Examiner attempts to rely on Figure 5 and column 7 of Tsutsui to support his allegations.

However, Applicants argue that the Examiner has clearly failed to establish a *prima facie* case of obviousness for combining the adhesive silver paste of Tsutsui with the device of Soules. MPEP 2142 states that *"[t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings"*. Additionally, MPEP 2142 states that *"[t]he initial burden is on the examiner to provide some suggestion of the*

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*desirability of doing what the inventor has done".*

Applicants further argue that the Examiner has clearly not established a *prima facie* case of obviousness. The Examiner has not provided any motivation for combining the adhesive silver paste with the device of Soules. Indeed, the Examiner merely states that Tsutsui teaches an adhesive silver paste. If the Examiner wishes to maintain this rejection (and similarly the rejection of dependent claims 78-85) Applicants point out that the Examiner must provide a proper motivation or suggestion to combine the adhesive silver paste of Tsutsui to establish a *prima facie* case of obviousness. The Examiner has failed to do so in the present Office Action.

#### **D. The Nakamura Reference**

The Examiner alleges that Nakamura would have been combined with Soules, Butterworth and Tsutsui to teach the claimed invention of claims 1-3, 6-10, 21, 22, 26-28, 30-34, 38, 40-42, 59, 61, 62, 67, 68, 78, 80 and 81. Applicants submit, however, that these references would not have been combined, and that, even if combined, the combination would not teach or suggest each and every element of the claimed invention.

That is, the Examiner's motivation to modify Soules, Butterworth and Tsutsui ("to increase ohmic contact and improve current spreading through the p-type semiconductor layers") does not appear to be a problem in Soules, Butterworth and Tsutsui that would require a solution. Thus, as pointed out in MPEP 2143.01, the Examiner's motivation is "improper". "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination" (emphasis added in MPEP).

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Furthermore, it is pointed out that MPEP 2141.02 clearly states the following very basic evaluation guideline: *"In determining the differences between the prior art and the claims, the questions under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious"* (emphasis in MPEP itself).

This guideline reflects the well established concept in patentability evaluation that a new invention may "merely" be a new and different combination of known elements.

Second, it is pointed out that MPEP 2143.01 clearly states a second guideline: "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination" (emphasis in MPEP itself).

Along these lines, Judge Rader wrote in a recent Federal Circuit Court of Appeals holding in *Ruiz v. A.B. Chance Co.*, Federal Cir., No. 03-1333, January 29, 2004:

*"In making the assessment of differences, section 103 specifically requires consideration of the claimed invention as a "whole." Inventions typically are new combinations of existing principles or features. Envtl. Designs, Ltd. v. Union Oil Co., 713 F. 2d 693, 698 (Fed. Cir. 1983) (noting that "virtually all [inventions] are combinations of old elements."). The "as a whole" instructions in title 35 prevents evaluation of the invention part by part. Without this important requirement, an obviousness assessment might break an invention into its component parts (A+ B+ C), then find a prior art reference containing A, another containing B, and another containing C, and on that basis alone declare the invention obvious. This form of hindsight*

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degradation) does not appear to be a problem in Soules, Butterworth, Tsutsui and Nakamura that would require a solution. Thus, as pointed out in MPEP 2143.01, the Examiner's motivation is "improper". "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination" (emphasis added in MPEP).

Moreover, neither Soules, Butterworth, Tsutsui, Nakamura nor Thompson, nor any combination thereof, teaches or suggests "*a primary light source comprising a GaN semiconductor light-emitting device that emits a first light of a wavelength of substantially the entire range of 380 nm to 500 nm*" (emphasis added) as recited in independent claim 1, and similarly recited in independent claims 11, 21, 42 and 63-66.

The novel combination of features of the claimed invention is not taught or suggested by Thompson. Indeed, the Examiner merely attempts to rely on Thompson as allegedly teaching a full-color LED assembly including two LEDs and a photoluminescent downconverter phosphor disposed for re-emission of longer wavelength light in response to light that is emitted from only one of the two LEDs. The Examiner relies upon the disclosure of Thompson to support his allegations.

Nowhere, however, in this passage (nor anywhere else for that matter) does Thompson teach or suggest a primary light source including a GaN semiconductor light-emitting device that emits a first light having a wavelength of substantially the entire range of 380 nm to 500 nm. Indeed, the Examiner does not even allege that Thompson teaches a primary light source including a GaN semiconductor light-emitting device that emits a first light having a wavelength of substantially the entire range of 380 nm to 500 nm. Therefore, Thompson fails to make up for the deficiencies of Soules, Butterworth, Tsutsui and Nakamura.



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Regarding the Examiner's rejection of claim 73, the Examiner merely states that "[t]he particular compound claimed is not unobvious as AlGaAs material for red emission is old in the art and one of the first materials to be practiced" (see Office Action dated May 23, 2005). However, the Examiner has failed to provide any support for this allegation.

If the Examiner wishes to maintain this rejection, Applicants request the Examiner to provide a reference, that is properly combinable with the applied prior art references, that teaches the features recited in claim 73.

Therefore, Applicants submit that these references, even if combined, would not teach or suggest each and every element of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

#### **G. The Komoto Reference**

The Examiner alleges that Komoto would have been combined with Soules, Butterworth, Tsutsui and Nakamura to teach the claimed invention of claims 46, 49, 50, 72 and 75. Additionally, the Examiner alleges that Komoto would have been combined with Soules, Butterworth, Tsutsui, Nakamura and Thompson to teach the claimed invention of claim 74. Applicants submit, however, that these references would not have been combined, and that even if combined, the combination would not teach or suggest each and every element of the claimed invention.

That is, the Examiner's motivation to modify Soules, Butterworth, Tsutsui and Nakamura ("for increasing the versatility of the manufacturing process b[y] allowing the resultant color of a given batch to be changed to a wider array of colors") does not appear to be a problem in Soules, Butterworth, Tsutsui and Nakamura that would require a solution.

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Thus, as pointed out in MPEP 2143.01, the Examiner's motivation is "improper". "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination" (emphasis added in MPEP).

Moreover, neither Soules, Butterworth, Tsutsui, Nakamura nor Komoto, nor any combination thereof, teaches or suggests *"a primary light source comprising a GaN semiconductor light-emitting device that emits a first light of a wavelength of substantially the entire range of 380 nm to 500 nm"* (emphasis added) as recited in independent claim 1, and similarly recited in independent claims 11, 21, 42 and 63-66.

The novel combination of features of the claimed invention is not taught or suggested by Komoto. Indeed, the Examiner merely attempts to rely on Komoto as allegedly teaching a plurality of light emitting devices arranged in a matrix for various types of displays, that the fluorescent material may be dispersed in a layer that is formed on top of a subadjacent light transmittable layer that focuses the light, and that the device may include two light transmission layers respectively including first and second materials. The Examiner relies upon column 2, lines 25 et seq. and Figures 30C and 41-46 of Komoto to support his allegations.

Nowhere, however, in this passage or these figures (nor anywhere else for that matter) does Komoto teach or suggest a primary light source including a GaN semiconductor light-emitting device that emits a first light having a wavelength of substantially the entire range of 380 nm to 500 nm. Indeed, the Examiner does not even allege that Komoto teaches a primary light source including a GaN semiconductor light-emitting device that emits a first light having a wavelength of substantially the entire range of 380 nm to 500 nm. Therefore,

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Komoto fails to make up for the deficiencies of Soules, Butterworth, Tsutsui and Nakamura.

Therefore, Applicants submit that these references, even if combined, would not teach or suggest each and every element of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

#### H. The Shimizu Reference

The Examiner alleges that Shimizu would have been combined with Soules, Butterworth, Tsutsui and Nakamura to teach the claimed invention of claims 43-45, 63-66 and 82-85. Applicants submit, however, that even if these references were combined, the combination would not teach or suggest each and every element of the claimed invention.

That is, the Examiner's motivation to modify Soules, Butterworth, Tsutsui and Nakamura ("providing greater efficiency than a SQW active layer") does not appear to be a problem in Soules, Butterworth, Tsutsui and Nakamura that would require a solution. Thus, as pointed out in MPEP 2143.01, the Examiner's motivation is "improper". "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination" (emphasis added in MPEP).

Moreover, neither Soules, Butterworth, Tsutsui, Nakamura nor Shimizu, nor any combination thereof, teaches or suggests "*a primary light source comprising a GaN semiconductor light-emitting device that emits a first light of a wavelength of substantially the entire range of 380 nm to 500 nm*" (emphasis added) as recited in independent claim 1, and similarly recited in independent claims 11, 21, 42 and 63-66.

The novel combination of features of the claimed invention is not taught or suggested

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by Shimizu. Indeed, the Examiner merely attempts to rely on Shimizu as allegedly teaching that it was conventionally known to provide LED groups including R, G, B and W LEDs for various conventional light purposes. The Examiner relies upon Figure 12 of Shimizu to support his allegations.

Nowhere, however, in this figure (nor anywhere else for that matter) does Shimizu teach or suggest a primary light source including a GaN semiconductor light-emitting device that emits a first light having a wavelength of substantially the entire range of 380 nm to 500 nm. Indeed, the Examiner does not even allege that Shimizu teaches a primary light source including a GaN semiconductor light-emitting device that emits a first light having a wavelength of substantially the entire range of 380 nm to 500 nm. Therefore, Shimizu fails to make up for the deficiencies of Soules, Butterworth, Tsutsui and Nakamura.

Therefore, Applicants submit that these references, even if combined, would not teach or suggest each and every element of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

#### **I. The Chiyo Reference**

The Examiner alleges that Chiyo would have been combined with Soules, Butterworth, Tsutsui and Nakamura to teach the claimed invention of claims 51-58, 76 and 77. Applicants submit, however, that even if these references were combined, the combination would not teach or suggest each and every element of the claimed invention.

That is, the Examiner does not provide a motivation to modify Soules, Butterworth, Tsutsui and Nakamura as suggested above. The Examiner merely states that GaInN MQWs were conventionally known at the time of the invention for emitting blue light. Thus, as

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pointed out in MPEP 2143.01, the Examiner's motivation is "improper". "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination" (emphasis added in MPEP).

Moreover, neither Soules, Butterworth, Tsutsui, Nakamura nor Chiyo, nor any combination thereof, teaches or suggests "*a primary light source comprising a GaN semiconductor light-emitting device that emits a first light of a wavelength of substantially the entire range of 380 nm to 500 nm*" (emphasis added) as recited in independent claim 1, and similarly recited in independent claims 11, 21, 42 and 63-66.

The novel combination of features of the claimed invention is not taught or suggested by Chiyo. Indeed, the Examiner merely attempts to rely on Chiyo as allegedly teaching that the blue-emitting LED active region may be composed of InGaN MQWs. The Examiner relies upon column 12, lines 57-65 of Chiyo to support his allegations.

Nowhere, however, in this figure (nor anywhere else for that matter) does Chiyo teach or suggest a primary light source including a GaN semiconductor light-emitting device that emits a first light having a wavelength of substantially the entire range of 380 nm to 500 nm. Indeed, the Examiner does not even allege that Chiyo teaches a primary light source including a GaN semiconductor light-emitting device that emits a first light having a wavelength of substantially the entire range of 380 nm to 500 nm. Therefore, Chiyo fails to make up for the deficiencies of Soules, Butterworth, Tsutsui and Nakamura.

Therefore, Applicants submit that these references, even if combined, would not teach or suggest each and every element of the claimed invention. Therefore, the Examiner is respectfully requested to reconsider and withdraw this rejection.

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#### V. FORMAL MATTERS AND CONCLUSION

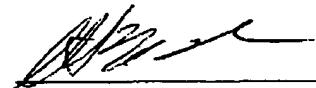
In view of the foregoing, Applicants submit that claims 1-3, 6-10, 21, 22, 26-28, 30-34, 38, 40-42, 59, 61 and 62-85, all of the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: July 19, 2005

  
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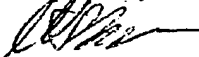
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**FACSIMILE TRANSMISSION**

I hereby certify that I am filing this paper via facsimile, to Group Art Unit 2815, at  
(571) 273-8300, on July 19, 2005.

Date: July 19, 2005

Respectfully Submitted,



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